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de Graaf, G.

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Research and Education Reports

Veterinary Students' Views on Animal Patients and Human Clients, Using Q-Methodology

Gjalt de Graaf

ABSTRACT

Veterinarians serve two masters: animal patients and human clients. Both animal patients and human clients have legitimate interests, and conflicting moral claims may flow from these interests. Earlier research concludes that veterinary students are very much aware of the complex and often paradoxical human relationship they have and will have with animals. In this article the views of veterinary students about their anticipated relationship with animal patients and human clients are studied. The main part of the article describes discourses of first-year and fourth-year students about their (future) relationship with animals and their caretakers, for which Q-methodology is used. At the end of the article, the discourses are related to the students' gender and their workplace preferences.

INTRODUCTION

Veterinarians serve two masters: animal patients and human clients.¹ The most fundamental question of veterinary ethics, according to Rollin, is this: To whom does the veterinarian morally owe primary allegiance—owner or animal?^{2,3} Both animal patients and human clients often have legitimate interests, and conflicting moral claims may flow from these interests.¹ To make matters more complex, veterinarians have to consider many more interests, including their own (commercial—the veterinarian needs to make a living), those of the animal population (absence of animal diseases), and those of society at large (food safety and public health).^{1,3,4} Earlier research concludes that veterinary students are very much aware of the complex and often paradoxical human relationship they have and will have with animals. For example, according to Herzog, Vore, and New,

Psychologically, it is not easy to kill a dog that you have tended for three weeks or to castrate a pig without anesthesia or to remove the eyeball from a cow or to resist a trainer who wants to inject a show horse with steroids. Yet these are the types of issues that veterinarians and veterinary students face daily.⁵

The central question of this study was, How do veterinary students view their anticipated relationship with animal patients and animal owners? Here, first-year and fourth-year veterinary students' anticipated triangular relationships with animals and human clients will be described. For each cohort, four different views (discourses) will be provided. In order to describe the views (discourses) of the students, a discourse analysis using Q-methodology was conducted. Q-methodology was used because it offers researchers the opportunity to describe the views (discourses) of the students as much as possible in their own words. Since the literature raises interesting questions (see below) concerning the gender of students, their workplace preferences, and their views on their anticipated relationships with animals and their caretakers, the study also addressed how the gender and workplace preferences

of these students relate to their views on their (anticipated) triangular relationship with animal patients and human clients.

DISCOURSES ON VETERINARY STUDENTS AND THEIR TRIANGULAR RELATIONSHIP WITH ANIMAL PATIENTS AND HUMAN CLIENTS

When we look at the (broader) literature on how veterinary students view their anticipated relationships with animal patients and human clients and related issues, we first note that studies reveal that veterinary schools in general recognize the need to prepare entry-level practitioners to deal with the human–animal bond and with human relations.⁶ Despite the conclusion of Williams, Butler, and Sontag⁷ that most American senior veterinary students do not believe they are receiving adequate instruction on the human–animal bond, interest in the subject of animal welfare and ethics seems to be increasing in veterinary schools worldwide.⁸ Self et al.,^{9,10} having studied the moral development of veterinary students using Kohlberg's theory on moral development, conclude that veterinary medical education inhibits an increase of moral reasoning. Furthermore, a significant correlation was found between moral reasoning scores and gender, with females scoring higher.

A study more focused on the welfare of animals was done in Great Britain by Paul and Podberscek.¹¹ Analyses of variance revealed that year of study was significantly related to students' perception of the sentience of dogs, cats, and cows: students in later years of study rating these animals as having lower levels of sentience. Female students rated themselves as having significantly higher levels of emotional empathy with animals than did the male students. Martin, Ruby, and Farnum¹² concluded, after administering a questionnaire to 146 American veterinary students, that students consider the human–animal bond an important and valuable construct, one that was influential in their decision to become veterinarians. However, the importance of the human–animal bond seems to decrease as students

progress through school. Students aspiring to food-animal careers seem to attach less value to some aspects of the human-animal bond, while female students attached more importance than male students to the role the human-animal bond plays in their lives. Blackshaw and Blackshaw¹³ concluded that by their final year Australian veterinary students have developed some sensitivity in the area of the human-animal bond, which may have been aided by their courses in animal behavior and welfare. Herzog et al.⁵ interviewed 24 graduating American students to explore their attitudes and perceptions. They found that rationalization was a common mechanism by which students attempted to deal with stressful experiences.

The question remains in what different ways veterinary students view their (future) triangular relationship with animal patients and human clients. This question will be answered, in this article, through a study that describes the discourses of veterinary students on their (anticipated) relationship with animal patients and their caretakers. The term “discourse” is defined here as “a specific ensemble of ideas, concepts and categorizations that are produced, reproduced and transformed in a particular set of practices and through which meaning is given to physical and social realities.”^{14,a} Discourses thus necessarily contain both facts and values.^{14,15} moral elements and factual statements are inextricably joined within a discourse.¹⁶ Here, the described discourses of the students on their (anticipated) triangular relationships with animals and their owners must be very broad, because all the opinions of a person relate to one another in some way. This means that when someone talks about farm animals, his or her views on intensive animal husbandry are part of the discourse on animals and caretakers.¹³⁻¹⁷ Moral issues—how to treat animals, non-therapeutic surgery, lay veterinary care, farm-animal reproduction, the use of growth-enhancing drugs, production or performance, reproduction technology, and so on—are indissolubly tied to veterinary students’ factual images of animals and their owners. The moral questions and the factual images are part of the same discourse. Many ethical disagreements concerning veterinary practice are not disagreements on the perceived values of animals but, rather,

rest upon differences about what, in fact animals are capable of experiencing. For example, some who believe it is sufficient to prevent farm animals from experiencing pain and discomfort generally believe these animals are capable of such mental states but of little more. In contrast, some who argue that such animals should not be kept in severe confinement believe these animals are capable of experiencing such psychological states such as distress, suffering, boredom and anxiety and that confinement methods of husbandry cause them to experience these states.¹

METHOD: Q-METHODOLOGY

To uncover the discourses veterinary students have about their anticipated relationships with animals and their caretakers, a discourse analysis using Q-methodology was conducted. The advantage of Q-methodology is that the

discourses are examined and described without categories pre-developed by the researcher¹⁸ and that the views of the students can be expressed and communicated in something very close to their own language and perceptions. Dryzek and Berejikian¹⁸ state that

Q study will generally prove a genuine representation of that discourse as it exists within a larger population of persons... To put it another way, our units of analysis, when it comes to generalizations, are not individuals, but discourses. The discourses are examined without pre-developed categories by the researcher. On the contrary, Q-methodology gives researchers the opportunity to reconstruct the discourses in their own words using only those spoken by individuals involved in the discourse.

In veterinary studies, Q-methodology is widely seen as a relatively novel method,¹⁹ though it has been around for about 70 years²⁰. Q-methodology is a hybrid qualitative-quantitative method that provides a foundation for the systematic study of subjectivity, peoples’ viewpoints, beliefs, attitudes, feelings, opinions, and the like.²¹⁻²⁴ According to Cross,²⁵ Q-methodology is a more robust technique than alternative methods for the measurement of attitudes and subjective opinion.

The instrumental basis of Q-methodology is the Q-sort technique. As Brown writes,

Most typically, a person is presented with a set of statements about some topic, and is asked to rank-order them (usually from “agree” to “disagree”), an operation referred to as “Q sorting.” The statements are matters of opinion only (not fact), and the fact that the Q sorter is ranking the statements from his or her own point of view is what brings subjectivity into the picture. There is obviously no right or wrong way to provide “my point of view” about anything—health care, the Clarence Thomas nomination, the reasons people commit suicide, why Cleveland can’t field a decent baseball team, or anything else. Yet the rankings are subject to factor analysis, and the resulting factors, inasmuch as they have arisen from individual subjectivities, indicate segments of subjectivity which exist. And since the interest of Q-methodology is in the nature of the segments and the extent to which they are similar or dissimilar, the issue of large numbers, so fundamental to most social research, is rendered relatively unimportant.²⁶

In a Q-methodological study, people are typically presented with a sample of statements about some topic (here, issues concerning the relationship with animals and their caretakers, plus related issues), called the Q-set. A pre-selected group of respondents, called the P-set, is asked to rank-order these statements from their individual point of view, using a quasi-normal distribution, according to some preference, judgment, or feeling about them, and, after finishing, to explain their ordering of the statements. The Q-sorts are factor-analyzed with the objective of revealing a limited number of corresponding ways in which the

statements have been sorted by respondents. By Q-sorting, people give subjective meaning to the set of statements and thus reveal their subjective viewpoints.²⁷ Stephenson²⁰ presents Q-methodology as an inversion of conventional factor analysis, in the sense that Q correlates persons instead of tests. In Q-analysis, correlation between individual rankings of statements is viewed as an indication of similar viewpoints. After all, if each individual has his or her own specific likes and dislikes, their Q-sorts will not correlate; if, however, significant clusters of correlations exist, these can be factorized and described as common viewpoints, and individuals can be measured against them.

In order to constitute the Q-set in a way that stays as close to the students' own words as possible, 15 open-ended interviews first were conducted, by the author of this article, with first-year and fourth-year veterinary students. These students were randomly selected from the Faculty of Veterinary Medicine of the University of Utrecht, which is the only veterinary medical school in the Netherlands. The rationale for studying first-year and fourth-year students is the following. The first-year students were surveyed in their first semester of study, offering an opportunity to study students' views on their anticipated relationship with animals and their caretakers at the very beginning of their university education, before these views have been influenced by their studies. The cohort of fourth-year students was chosen because this is the last year before veterinary medicine students at Utrecht begin to specialize in either companion animals or farm animals (animals for food consumption).

In the taped interviews, the students were invited to talk about as many aspects of their (future) relationship with animals and their owners as their time would allow. The average interview lasted about one hour. All relevant statements about animals and their caretakers were later transcribed.

The interviews yielded a list of about 180 statements (100 from first-year students and 80 from fourth-year students). In cases of substantial overlap between statements, only one statement was retained. From this collection, a sample of 42 statements of each cohort was selected for use in subsequent interviews with smaller groups of first-year and fourth-year veterinary students (the P-set¹⁹). There is some overlapping of statements between the two Q-sets. When it appeared that a certain issue was not

addressed, a statement from the other Q-set was chosen, rather than composing a statement. The statements were not edited; ambiguity was resolved by the Q-sorters, who gave their own interpretation to each statements, according to their own worldviews. To check the representativeness of the statements, an additional question asked the Q-sorters whether the list was missing any aspect of their (future) relationship with animal patients and human clients that they believed was relevant to their opinions. The answers to this question confirmed that all the relevant issues were included in the Q-sets.

Next, 40 first-year and 35 fourth-year respondents, the Q-sorters, were selected. At the close of a mandatory class that included all (220) first-year veterinary students, volunteers were asked to help with the study. About 70 students offered their assistance, of whom 40 were randomly chosen.

Almost the same process was followed with the fourth-year students (about 200 in total). Since fourth-year students at Utrecht do not have any common mandatory classes, three clinical demonstrations were visited, each with attendance between 10 and 60. The first of these yielded 20 volunteers; the second, 10; and the third, five. Although the method used to select respondents was (necessarily) slightly different, which may have introduced a biased population, this does not seem to be a significant problem. In both cases fairly large samples were used, and in both cases volunteers were used, so that the possible biases introduced by using volunteers should be similar.

Each respondent was given a deck of 42 cards containing the 42 statements (the Q-set). Respondents were asked to rank-order the 42 cards according to a quasi-normal fixed distribution, ranging from *disagree most* to *agree most*,^{b,c} in other words, each respondent was asked to give his or her opinion about the 42 statements by placing them on a continuum. The final distribution was the Q-sort. After the Q-sorting, additional questions were asked in order to see whether important issues concerning relationships veterinary students have with animals and their caretakers were missing, as well as to gain more insight into the discourses by asking students about the reasons behind the choices they made. The students were also asked about their gender, age, and the field they intended to practice in (farm animals, companion animals, or something else). The gender and workplace preferences of the respondents can be found in Tables 1 (first-year students) and 2 (fourth-year students).

Table 1: Discourse A₁: Instinctive future supporters of cattle breeders

	A ₁	B ₁	C ₁	D ₁
17. I think intensive animal husbandry is more than terrible.	-2	-1	0	-2
23. Farmers want to produce in a different way, but that is simply impossible.	+3	0	+1	0
28. The well-being of the animal is the most important thing for me. Even more important than the interests of the owner.	-2	+1	-1	0
36. To kill a healthy animal is always idiotic.	-3	-1	-1	0
12. On request, I would probably kill healthy animals. Otherwise, the owners will go to a different vet. Now at least I collect the 35 guilders.	-1	-3	-3	-3
5. It must be economical to treat an animal. Vets are there to suggest solutions. In the end, the animal owner decides.	+2	-1	+2	+1

The Q-sorts were then analyzed,^d with the goal of seeking patterns among the Q-sorts: Are there similar ways in which the students have prioritized the 42 statements? In this case, factor analysis was used, which is standard in Q-methodology. First a centroid factor analysis (also standard in Q-methodology) produced different factors, which were then rotated according to the varimax rotation (also standard in Q-methodology). This analysis led to four different factors for each of the two groups. (Extraction of more than four would have led, in both cases, to statistically insignificant factors, that is, factors with eigenvalues <1 and/or fewer than two associated respondents.) For each resulting factor, an idealized Q-sort (or *composite sort*) was computed. The composite sort is a weighted average ranking of the statements, computed on the basis of the Q-sorts of the respondents associated with that factor, with the correlation coefficient as weights. This composite sort represents how a hypothetical student with a 100% loading on the factor would have ordered the 42 statements.

RESULTS: THE DISCOURSES

The four factors in each group deliver the most important information to reconstruct four discourses: four different views about the relationships students (expect to) have with animals and their caretakers. Here, in each discourse description, first a label is presented; some relevant statements for the discourse are then presented, together with the idealized score of the four discourses in that cohort (first-year or fourth-year students). Finally, a narrative of the discourse is presented.

The composite sorts are used to interpret and describe the discourses. A first interpretation of a factor, giving a first impression of what the discourse is all about, is based on the *characterizing statements* for that factor (those with a rank value of +3, +2, -2, -3 in the composite sort). Next, differences and similarities between factors are highlighted using the *distinguishing statements* (those with a statistically significant different rank value as compared to all other factors) and the *consensus statements* (those that do not distinguish any of the factors). Finally, respondents' explanations of their ranking of statements often proved to be helpful in interpreting the discourses. As much as possible, these remarks by respondents are also used to describe the discourses; they are presented in italics. In this way, the discourse descriptions stay as close as possible to the actual language the students used. All translations to English are by the author.

First-Year Veterinary Students

Discourse A₁: Instinctive Future Supporters of Cattle Breeders – Students of discourse A₁ (Table 1) do not object to intensive animal husbandry: People who do often haven't experienced intensive animal husbandry up close. People who say this don't get it at all; they're ignorant and stupid! They consider that, in the Netherlands, the industry is going well, although there is always room for improvement. That intensive farming is often portrayed negatively in the news, they believe, is unfair and caused by ignorance. People are prone to glorifying nature and blaming farmers for mistreating animals, while they don't have a clue as to what they are talking about.

Many people complain about farmers, who are really trying to do their best. Students from discourse A₁ (see Table 1) feel a deep sympathy for the cattle breeder and think that farmers are doing the best they can for their animals. Farmers have chosen this profession because of the animals, for it's not lucrative, it's nostalgic and traditional; it takes heart. Although they need to earn their money, they really care about their animals. They believe there is little cattle breeders can do to improve the situation, even though they are prepared to. As long as consumer behavior doesn't change, farmers simply can't change their production methods. A farmer can't always do what he wants, because his economic interest plays a role. Farmers usually want improvement for animals, but this isn't feasible economically. The system needs to work and be lucrative. Students from discourse A₁ do not like the emphasis on poor treatment of farm animals when there is just as much wrong with pets.

These students believe that it is nonsense to claim that killing healthy animals is wrong; in the meat industry this happens all the time, and there is nothing wrong with it. We are allowed to keep animals and kill them for meat production. In animal husbandry, the animals provide the farmer's income. What is essential is that the animals have decent lives, and this depends largely on the cattle breeder. Fortunately, the animals' well-being in the farming sector is generally quite good, owing to the hard work of Dutch farmers (even though there are exceptions: *for not every person is as easy*). Farmers do not treat their cattle as just a product. They are clearly connected to them and do not forget that their animals are alive. *A cattle breeder doesn't see his cattle as lumps of meat. He realizes what he's doing.*

When all is said and done, it is the animals' caretakers who decide on the treatment of the animals. Of course they need to weigh different issues, including economic ones, but this they generally do responsibly. You can hardly expect farmers not to consider economic interests; after all, they are entrepreneurs. The veterinarian's duty is to help the caretaker make decisions by providing solutions: *You need to work it out together.* The veterinarian's loyalty must therefore be with both the animal and its caretaker; it cannot be said that the animal's interest is superior to the caretaker's. *I think owners are important; for them you do your job. You come into the farmer's home, not vice versa. Animals are number one, but you're not the manager. It's their animal; in a way, they can decide about it.* Thus it may happen that they will receive requests that, at first, they do not like. These have to be worked out with the caretaker. The veterinarian will have to compromise as well. Of course, veterinarians can always try to convince farmers of their views; their role is an *advisory one*.

Discourse B₁: Instinctive Animal Lovers – The correlation between discourses A₁ (Table 1) and B₁ (Table 2) is by far the lowest among the four. They deal with most issues in a completely different way. The paramount reason that students from discourse B₁ (Table 2) want to be veterinarians is their love for animals. They instinctively object to the way in which our society often deals with animals: *My view on the use of animals for people is instinctive.* Their instincts apply to companion animals as well. In both areas, many things go wrong.

They feel meat should be produced in a different way. The way animals are kept for food production is considered

Table 2: Discourse B₁: Instinctive animal lovers

	A ₁	B ₁	C ₁	D ₁
27. It fascinates me to see how you can maximize meat production.	−1	−3	−2	0
34. The way animals are kept as consumer goods is not always reasonable. I want to change that.	0	+3	+2	+2
33. My loyalty as a vet will in the first place be with the animal. How I will deal with that exactly, will depend on the sector I will work in. As far as, for example, a cow is concerned, I won't just look at the individual animal, but also at the farm as a whole.	+1	+3	+1	+1
28. The well-being of the animal is the most important thing for me. Even more important than the interests of the owner.	−2	+1	−1	0
35. It bothers me that people always say that there is so much wrong in the farm-animal sector, because in the companion-animal sector, it is just as bad.	+2	+2	−1	0
10. If the disadvantages for animals are small, and the advantages for humans are very big, I do not object to the use of drugs to enhance growth, production, or performance.	+1	−2	−1	0

Table 3: Discourse C₁: “Thinking” and principled animal lovers

	A ₁	B ₁	C ₁	D ₁
4. I have great doubts about the modern reproduction technology for animals.	0	0	+1	−1
6. The animal has become a product. The fact that it also lives is something that tends to be forgotten.	−1	+1	+3	−1
21. I have not thought much about the ethical side of veterinary practice.	−1	−1	−3	−2
7. I have thought a lot about the ethical side of veterinary practice.	+1	0	+3	+2

unreasonable. *I, for one, think the current housing of pigs in dry sow stalls is unacceptable. I think animal welfare suffers and it shows a great lack of respect for the animal. They are also prepared to help realize an alternative production method. When they compare animals in intensive farming to nature, they find that nature is closer to ideal. They feel that having animals solely for the use of people is problematic. Thus, even when there is little harm to the animal and great benefit for people, students from discourse B₁ object to drug enhancement without medical indication. What keeps them from working in the agricultural sector is the economic interests they would have to take into account: I think farm animals are interesting, but I don't like the economic aspect. That is not interesting to me; I would have gone into economics if it were.*

It is not the caretaker who should decide what happens to the animal but the veterinarian, though the veterinarian has to deal with the caretaker: *Animals take center stage, but you cannot see the caretaker apart from them. It's my goal to work for animals, not owners. Unfortunately, things often revolve around the owner. Nonetheless, Both the caretaker and the animal are important to you, and the animal is of value to the caretaker. Veterinarians are not there only to provide solutions. Financial matters should play only a marginal role in decisions about animal well-being. Students from discourse B₁ almost invariably choose in favor of the animal's well-being, which is more important than the interests of the caretaker: I think that in my future job the animal comes first. This is often an instinctive choice. Not all of them have given a lot of thought to the existence and interests of the caretaker. While their loyalties*

as veterinarians will be with the animal first, the question is a bit more complicated. The veterinary sector makes a difference: a veterinarian visualizes not merely the individual cow, for instance, but the entire farm.

Discourse C₁: “Thinking” and Principled Animal Lovers – The correlation between the factors of students from discourses B₁ (Table 2) and C₁ (Table 3) is high, though clear differences exist. Compared to students from discourse B₁, those from discourse C₁ are slightly more pessimistic and less convinced that things are going in the right direction in intensive animal husbandry.

Students from discourse C₁ (Table 3) seriously object to intensive animal husbandry in the Netherlands, especially the maximization of meat production. They do not idealize nature—that can be a tough world too—but they object to the economic aspect of the farm-animal sector. While sharing this view with students from discourse B₁ (Table 2), they (and only they) have fewer problems with the companion-animal sector. The problem in the farm-animal sector is that the animal has become a product: *It's against the intrinsic value of the animal, for instance, the method of slaughtering of chickens in the poultry industry. I think that people are missing the link between product and animal. It is often forgotten that the animal is alive: It's always about cheap methods of production; the animal is forgotten. The problem, they say, is in a system that has become rooted in society. Not so much the farmer but the consumer is guilty.*

Students from discourse C₁ are more principled than students from discourse B₁ (Table 2). That a treatment is

necessary *because it is happening everywhere* they deem complete nonsense; they hold their own opinions, which seem more solid, less intuitive. It is typical of students from discourse C₁ to give thought to the ethical aspect of the profession and all related matters: *I feel it's very important to think about the ethical sides of any profession*. They have a clear view on, say, modern methods of reproduction (which are not immediately harmful to the individual animal's well-being). Arguments against them are often fundamental. They alone have serious doubts about modern reproduction techniques.

These students hesitate to take a view on killing healthy animals: it largely depends on the situation. Like students from discourse B₁, they believe that administering drugs without medical indication is not good, even when there is little harm to the animal and great benefits for people. Moreover, students from discourse C₁ are the only ones who feel that veterinary medicine is doing its best to shape students' opinions: *Factory-farming veterinarians need to graduate as well, don't they? Of course you are pushed in that direction*. (Students from discourse B₁ disagree: *Study is aimed at individual opinions. They have students think about ethical issues*.) Of the four factors, only students from discourse C₁ (Table 3) think their views on animals have changed somewhat during the short time they have studied veterinary medicine.

The principled attitude of students in discourse C₁ does not lead them to consider their role as significant. Nor does it lead them to act according to a few fixed rules; they cannot be accused of being rigid. *When you tie yourself to a fixed position, you lose your own judgment. After all, every situation is different*. A major difference from discourse B₁ (Table 2) is the view on the roles and tasks of animal caretakers. Students from discourse C₁ believe that the animal caretaker is primarily responsible for the animal. Veterinarians provide solutions to their problems, but in the end the caretaker decides. Caretakers' interests are significant in their judgments and, unlike students from discourse B₁, they are not prepared to place the animal's well-being above everything else. Another difference from discourse B₁ is that these students realized the interests of the caretaker even before beginning their studies: *I have chosen this profession because you get to deal with animals and people*. Along with their attention to farmers' interests, they are somewhat more positive about farmers than students in discourse B₁. This does not mean, however, that their loyalties are with the animal's caretaker; rather, their loyalties

are clearly with the animal itself, whatever the practice. *As a veterinarian you are there for the animals. The interests of the caretaker or farmer are not superior to the interest of the animal. But as a veterinarian, you will have to cooperate with customers. Not only my opinion will count, but theirs as well*.

Discourse D₁: Advocates of Animal Rights and Well-Being in Intensive Farming – The correlation between discourses A₁ (Table 1) and D₁ (Table 4) is the highest of all the eight discourses. Just as discourse C₁ (Table 3) is a somewhat principled counterpart of discourse B₁ (Table 2), discourse D₁ (Table 4) is a counterpart to discourse A₁ (Table 1), although the difference is slighter. Students from discourse D₁ regularly ponder the ethical side of the veterinary profession: *Ethical aspects play a large role in this profession. Animals cannot talk, and veterinarians are educated to know what is best for them and must make this clear. Animals cannot do this themselves*. An outcome of this attitude is that they have no disagreement with modern techniques of reproduction; it does not cause animals to suffer and may even improve animal well-being.

Like students from discourse A₁, students from discourse D₁ do not have fundamental objections to modern intensive animal husbandry, but they are more worried about animal well-being; as long as this is guaranteed, they feel, people may keep animals for consumption. Overall, they believe animal well-being is quite good in the Netherlands, but abuses do exist, and they constantly keep an eye out for these. They claim they will never be involved in abuse.

More than any other first-year students, those from discourse D₁ have major problems with killing healthy animals (apart from slaughter for consumption), and this they claim they will never do. It is unnecessary; it affects animal well-being in the most fundamental way: *I'm simply against the killing of healthy animals. As a veterinarian it's your duty to improve animals' lives... As long as the animal's well-being is still good, I think you may not/mustn't kill it. One of the biggest problems in the keeping of animals is boredom, which is something they do not know in nature*. They claim there are also many problems with the well-being of companion animals. *Many rabbits are not kept in an ideal way; dogs have to walk around in jackets and so on. The animal's integrity is damaged in a major way*.

Their view on caretakers, including farmers, is positive: *99% of farmers or more look at the animals' health first and only then at the economic interest*. Their loyalty is just as much

Table 4: Discourse D₁: Advocates of animal rights and well-being in intensive farming

	A ₁	B ₁	C ₁	D ₁
30. My loyalty will be as much with the animal as with the caretaker. You cannot look at the animal as separate from its caretaker.	+2	0	+1	+3
3. As long as the animal has a good life, I will never start killing a healthy animal.	0	0	0	+3
9. Before I was a student, I never realized that dealing with animal caretakers is an important part of veterinary practice.	-2	0	-2	-3
25. You cannot say, "I would never kill healthy animals." Together with animal caretakers, you always come to an agreement.	+1	+1	0	-1
7. I have thought a lot about the ethical side of veterinary practice.	+1	0	+3	+2

with the caretaker as with the animal. Like students from discourse A₁, those from discourse D₁ find it hard to separate the two: they cannot view the animal apart from the caretaker, and vice versa. They knew this before they started their studies. *I already knew that veterinary medicine largely had to do with animal bosses.* This opinion has not changed and is not very likely to do so.

Fourth-Year Veterinary Students

Discourse A₄: Future Supporters of the Responsible Farmer – Students from discourse A₄ (Table 5) view cattle breeders positively. They are, unlike students from discourses B₄ (Table 6) and C₄ (Table 7), convinced that farmers love their animals, *but this isn't noticed by the outside world. If they didn't, they wouldn't have become farmers.* It is nonsense to claim that farmers see their animals only as products. They say it bothers them that farmers are often portrayed negatively in the media: *Farmers do want to change things. Why judge a farmer who sticks to the rules and at the same time tail-dock your dog because it looks nicer?* Lay people form their opinions based on *one-sided images. Until now the consumer was stupid as far as that is concerned.* The consumer is

often mentioned as causing problems: *Consumers can run on terribly [humanizing companion animals].* The government contributes, too: *The fact that problems have arisen in the last couple of years is largely caused by the government's stimulation of farm production.*

Students from discourse A₄ do not have many problems with present-day intensive animal husbandry. There are few objections to castrating pigs without anesthesia. *Castrating pigs is not an ethical question anymore now; it happens everywhere and that is what you should consider.* They believe there is always room for improvement, but the field is obviously heading the right way: *A lot of thought is given to well being and well being is realized within the given possibilities.* There is not much wrong with the system itself: *Dairy cattle must take care of the farmer's income and may produce a bit more.* Incidentally, there is just as much wrong with companion animals. These students are the only ones convinced that the treatment of cattle depends largely on the farmer in question. Concerning improvements in the field, their belief is that the world cannot be changed by one individual and that, therefore, withdrawing from action is no solution. It is better for the veterinarian to act on, say, a utility surgery

Table 5: Discourse A₄: Future supporters of the responsible farmer

	A ₄	B ₄	C ₄	D ₄
17. The way farm animals are treated in the Netherlands depends usually on the farmer.	+2	0	0	0
18. I am against the castration of pigs without anesthesia. I would never do that.	-2	+1	+1	+2
2. You cannot change the world on your own. I do not see it as a solution when you withdraw yourself from certain practices. When utility surgery has to be performed, you had better do it yourself, and then at least it is done well.	+1	-1	-2	-2
40. The well-being of the animal is the most important thing for me. Even more important than the interests of the caretaker.	-2	0	+1	-1
30. I really cannot say whether my "loyalty" will be with the animal or the animal caretaker. That will purely depend on my judgment of concrete situations.	+3	0	-1	-1
13. As a veterinarian I will get requests that will offend me. It cannot be helped that other people think differently than I do. We will have to deal with that together. Therefore, I will have to make concessions too.	+3	+1	0	+1
4. My loyalty will primarily be with the animal. Every veterinarian has the primary duty to protect the well-being of the animal.	0	+2	+3	+3
10. Dairy cattle are top producers; you can compare them with athletes. I will never cooperate in letting them produce even more.	-3	+1	-1	-2

Table 6: Discourse B₄: Advocates of animals against the system of intensive animal husbandry

	A ₄	B ₄	C ₄	D ₄
41. I don't have a problem with the fact that animals have become a means of production. It is out of the animal that the farmer makes a living.	0	-3	+1	+1
1. The animal is of less importance than making money in intensive animal husbandry. I do not agree with that.	-1	+3	+1	-1
39. Intensive animal husbandry troubles me, especially the housing of animals. We have grown into the current situation, but if you look at it neutrally, it is a very unhealthy situation.	-1	+3	+2	0
35. I find the economic side of veterinary practice quite interesting.	0	-3	0	+1
16. When I am practicing, I expect I will have problems with animal caretakers.	+1	+2	0	+1

Table 7: Discourse C₄: Principled animal lovers confronted with harsh reality

	A ₄	B ₄	C ₄	D ₄
31. The animal has become a product. The fact that it also lives is something that tends to be forgotten.	−1	+2	+3	−1
8. If the disadvantages for animals are small, and the advantages for humans are very big, I do not object to the use of drugs to enhance growth, production, or performance.	0	−1	−2	0
24. I think many students will forget their ethical concerns at the moment they are practicing themselves. They will get used to things through routines.	+1	0	+2	0
42. The image I had of animals has not changed much during my studies.	0	−1	−3	+2
12. If you look at animals in nature, you see much misery. Do not idealize nature. That is a much tougher world for animals than the world of farm animals.	0	−1	−3	+2

that he or she does not fully support, because at least the veterinarian then has control of the situation.

Students from discourse A₄ are most involved with animal caretakers and feel a strong loyalty to them. They are thus the only ones who cannot say that their loyalty is primarily with the animal and that the paramount obligation of a veterinarian is to protect animals’ well-being. All other discourses are clear about the animal-loyalty role. This does not mean, however, that discourse A₄ students’ loyalties will always be with the farmer. Every situation must be judged individually: *Owner and animal must live together; I have to make decisions which are good for both, so it depends on the situation. You can never judge the animal and its owner independently, so your loyalty depends on the given situation.* They will find themselves, at times, being asked to do something they have problems with, at which point they will have to work out a solution with the farmer: *As a veterinarian you want to do what is best for the animal, but as time goes by you find out that this is not always possible [financially/economically].* In such cases, the veterinarian will also have to make concessions. Moreover, *the farmer often knows what’s best for his animals.* This means that students from discourse A₄ are the only ones who cannot say that they will never kill healthy animals. Everything must be solved in consultation with the caretaker. They are also alone in stating that they do not object to performing utility surgery.

Discourse B₄: Advocates of Animals against the System of Intensive Animal Husbandry – Among the four discourses, A₄ (Table 5) and B₄ (Table 6) have the least correlation. What is more, the correlation is the only negative one of all the discourses in the research project.

Students from discourse B₄ (Table 6) have major problems with the way animals are dealt with in intensive farming. The animal has become a product, and it is often forgotten that it is a sentient being. The individual animal in the poultry sector does not have any value, for instance. The cause can be found in money. In intensive farming the animal has become subsidiary to making money, and that is a very bad situation: *I am very much against the fact that animals are just kept for money and are therefore simply kept as cheaply as possible. Money, money, money! It’s all about money.* They do not think things are getting better: *It’s not going the right way—just take a look at pigs and chickens.* Students from discourse B₄ are strongly inclined not to

cooperate in intensive animal husbandry. They believe that animals in intensive farming have become merely a means of production: *I’ve got problems with that! Money plays far too important a role. The well being of animals is most important to me.* On housing: *I think it’s very bad that people house animals in this way. I strongly disapprove of how animals are kept in intensive animal husbandry.* The economic aspect of the profession and of intensive farming does not interest them in any way: *I am not interested in the economic aspect of farming. It’s important to keep up with the economic aspect, but it does not interest me much.”*

Students from discourse B₄ do not readily agree that farmers feel any love for their animals, but this does not mean that they view farmers negatively. What is wrong with farmers is the fault of the system. They believe it is not true that farmers only have eyes for the economic value of their animals: *This is stigmatizing. If farmers just wanted to make money, they all would turn to a job in information technology. Whether they listen [to veterinarians] depends on your own persuasiveness.*

These students took up veterinary medicine especially because of their love for animals. They do not support the idea that the caretaker has final responsibility and must make decisions about the animal: *I see myself as independent, not as a service provider to somebody but as a representative of the animal.* Many problems in dealing with caretakers are expected: *I think it will be very hard to deal with different types of caretakers. You will need a lot of practice for this, I guess. I often think about this and sometimes discuss it with people around me. Before my studies I did not give much thought to owners with their own opinions...This could surely lead to problems.*

The loyalty of students from discourse B₄ (Table 6) will be strongly with the animals. Every veterinarian is first obliged to protect the well-being of the animal: *That’s exactly my idea! My loyalty will always be first with the animal.* All this does not mean that the caretaker is absent from the picture; on the contrary, *As a veterinarian you are there also to help the owner.*

Their studies have changed their judgment of situations a bit: *I was unaware of the existence of some things or my perception was wrong.* They sometimes feel that they have begun to accept things they used to oppose. They do not believe, however, that this is the university’s intention.

Students from discourse C₄ (Table 7) disagree most that veterinary practice is a service-providing profession. *I chose veterinary medicine in the first place to help animals, not to please the owners. What it's about is helping an animal and protecting an animal.* A veterinarian's loyalty should be with the animal, and every veterinarian must protect animals' well-being. *This statement sums up my entire story.* The final

Still, there are some striking and major differences with discourse B₄. Students from discourse D₄ have a clear and principled attitude: *When you have principles, you should stick to them (i.e., not make concessions). You must be firmly in favor of well-being; you must be ethical. When you start performing operations you don't support, you aren't doing the right thing. Then you are denying your principles.* As veterinarians, they will keep their loyalties strongly with the animal. They seem to have had this attitude for a long time. The image they have of animals has changed little, if at all, during their studies. As long as the animal has a good life, they will not kill a healthy one: *This is my principle. I feel you do not kill healthy animals.* On the castration of pigs without anesthesia, students from discourse B₄ may not have many objections, but those from discourse D₄ (Table 8) do; they would not want to participate in this procedure. A consequence of this principled stand is that, as in discourse C₄ (Table 7), they expect problems when dealing with animal caretakers. In the end, the caretaker always decides: *In spite of what I said above, you must make concessions, for you are a service provider working for the owner.*

	A ₄	B ₄	C ₄	D ₄
42. The image I had of animals has not changed much during my studies.	0	-1	-3	+2
3. You cannot say, "I would never kill healthy animals." Together with animal caretakers, you always come to an agreement.	+1	0	-1	-2
6. As long as the animal has a good life, I will never start killing a healthy animal.	-1	+1	-2	+3

Conclusions about Gender and Workplace Preference

The main research question addressed in this article—how students of veterinary medicine view their anticipated relationship with animals and their caretakers—is answered by the eight discourse descriptions.

A sub-question was also formulated: How do gender and workplace preferences of students relate to their discourses? Tables 9 and 10 present the loadings of each respondent on each factor, as well as their gender and workplace preferences.

The defining variates of first-year students (Table 9) show no particular correlation between student gender and discourse. This impression can be subjected to more rigorous scrutiny²⁸ by treating the loadings on each of the four factors as separate dependent measures.^e The differences among these scores were analyzed on a 3×2 (preference \times gender) analysis of variance (ANOVA) design for students implicit in the P-set. The ANOVAs were done by making use of saturated models. In case of an overall significant difference between the three levels for preference of workplace, they were compared pairwise by separate (i.e., non-simultaneous) contrast tests.

The ANOVA amplified the initial impressions of first-year students. No difference between male and female students could be demonstrated with respect to any particular factor. This is surprising, since other studies have found correlations, among veterinary students, between moral reasoning or the human–animal bond and gender.^{7–10,11,12} It must be noted however, that few men participated in this study, since approximately 80% of current Dutch veterinary students are female.

Those choosing “farm-animal practitioner” have significantly higher loadings ($p \leq 0.02$) on factor A_1 (“Instinctive Future Supporters of Cattle –Breeders”; see Table 9). Not much can be said about the differences between first-year students’ preferences with respect to the three remaining factors.

Fourth-year students (Table 10) are similar to first-year students in this respect: gender does little to explain the variation in factor scores. There is, however, a strong relationship between their workplace preference and their discourse. All defining variates of discourse C_4 (“Principled Animal Lovers Confronted with Harsh Reality”; see Table 7) chose something other than working with either companion or farm animals. When asked to specify, three said “research.” The ANOVA clearly confirmed this with $p < 0.01$.

Discourses A_4 (“Future Supporters of the Responsible Farmer”; see Table 5) and D_4 (“Critical and Principled Future Farm-Animal Practitioners; see Table 8) clearly align with the farm-animal workplace preference. All 13 defining variates with this preference fall into one of those two discourses. Martin et al.¹² have also concluded that students aspiring to food-animal careers seem to attach less value to some aspects of the human–animal bond. The ANOVA confirmed this for discourse B_4 (Table 6) ($p \leq 0.01$) and for discourse D_4 (Table 8) compared to preference for companion animals ($p = 0.001$); “something else” gave almost significantly higher scores compared to companion animals ($p = 0.07$).

Table 9: First-year students’ factor loadings

A_1	B_1	C_1	D_1	Gender	Workplace Preference
−0.19	0.44	0.31	0.43	F	C
(0.49)	0.22	0.15	0.01	F	E
−0.02	0.21	(0.53)	−0.14	F	F
0.42	0.16	0.34	(0.55)	F	C
0.28	0.44	0.06	0.42	F	C
−0.01	0.39	0.46	0.45	F	E
0.47	0.26	(0.55)	0.29	F	E
0.03	0.27	0.28	(0.53)	M	C
−0.03	0.47	(0.60)	0.16	F	C
(0.54)	0.18	0.13	0.30	M	C
0.13	0.15	−0.05	(0.66)	F	E
0.37	0.31	0.10	0.43	F	C
0.41	(0.68)	0.10	−0.19	F	C
(0.49)	0.26	(0.50)	0.15	F	C
(0.64)	0.10	−0.15	0.01	F	F
(0.82)	0.06	0.11	0.03	F	F
0.09	0.02	(0.62)	0.16	M	C
0.33	0.19	0.13	0.12	M	C
(0.72)	0.00	0.17	0.21	M	C
0.17	(0.54)	0.05	0.10	F	C
0.32	0.21	0.46	0.22	F	C
(0.72)	−0.01	0.12	0.21	F	F
0.24	(0.54)	0.15	0.46	F	E
−0.05	(0.65)	0.08	0.33	F	E
0.08	(0.62)	0.11	0.27	M	C
0.04	0.37	0.23	0.26	M	E
0.37	0.14	−0.05	(0.51)	F	E
0.31	(0.49)	0.37	0.24	F	E
0.41	0.12	0.18	(0.51)	F	E
(0.81)	−0.23	−0.18	0.08	M	F
(0.48)	0.30	0.16	0.18	F	E
(0.64)	0.20	0.12	(0.57)	M	C
0.29	0.13	0.26	0.39	M	E
0.16	0.28	0.27	0.02	F	E
(0.55)	0.29	0.46	0.27	F	F
(0.53)	−0.04	0.43	0.21	F	C
(0.64)	0.23	0.41	0.27	F	F
−0.13	(0.60)	0.16	0.24	F	C
0.35	0.06	0.34	0.41	F	C
0.24	(0.63)	0.29	0.01	M	F

Defining variates (loadings that exceed 0.48, $p < 0.001$) are given in parentheses.

Workplace preference key:

F = Farm-animal practitioner.

C = Companion-animal practitioner.

E = Something else.

Table 10: Fourth-year students' factor loadings

A ₄	B ₄	C ₄	D ₄	Gender	Workplace Preference
0.25	0.38	0.46	0.28	F	F
(0.74)	0.30	0.11	−0.19	F	C
(0.52)	0.19	0.07	0.02	F	F
−0.02	(−0.62)	−0.13	−0.17	M	C
0.17	0.8	(0.62)	0.02	F	E
−0.14	(0.75)	0.14	0.05	F	C
0.26	0.16	0.42	0.22	F	C
0.06	0.23	0.28	(0.54)	F	F
0.20	0.22	0.42	0.26	F	E
0.14	0.25	(0.49)	0.04	F	E
(0.68)	−0.12	−0.01	−0.02	F	F
−0.27	(0.66)	0.32	−0.24	M	C
(0.49)	0.15	0.34	0.20	F	C
(0.76)	−0.16	−0.05	0.25	M	F
−0.27	(0.58)	0.46	0.05	F	C
(0.52)	−0.25	0.21	0.37	F	F
(0.60)	−0.05	−0.04	0.18	F	F
0.33	(0.49)	−0.08	0.12	F	C
(0.63)	−0.13	0.07	0.08	F	F
(0.61)	−0.01	0.01	0.12	F	F
0.10	(0.64)	0.14	0.30	F	C
−0.02	(0.58)	0.29	−0.07	F	C
0.29	0.06	0.09	0.44	F	F
0.05	(0.59)	0.43	0.12	F	C
−0.23	(0.55)	0.37	−0.05	F	C
0.35	0.07	0.25	0.21	F	F
(0.60)	0.05	0.14	0.04	M	F
0.20	(0.65)	0.16	−0.12	F	C
−0.10	0.40	(0.56)	0.26	M	E
0.10	−0.11	0.08	(0.63)	M	F
0.06	0.16	0.08	(0.68)	F	F
0.36	0.02	0.14	(0.57)	F	F
−0.02	0.16	0.01	0.02	F	F
−0.16	0.27	(0.53)	0.29	F	E
(0.58)	−0.20	0.01	0.25	M	F

Defining variates (loadings that exceed 0.48, $p < .001$) are in parentheses.

Workplace preference key:

F = Farm-animal practitioner.

C = Companion-animal practitioner.

E = Something else.

Discourse B₄ ("Advocates of Animals against the System of Intensive Animal Husbandry"; see Table 6) is clearly related to a preference for working with companion animals: 10 of the 12 students giving this field as their preference fall into discourse B₄. Significantly higher scores were found for preferences for companion animals compared to farm animals ($p = 0.02$), and nearly significantly higher scores for "something else" compared to farm animals ($p = 0.06$).

DISCUSSION

Since there are clear parallels between the discourses of first-year students and those of fourth-year students, and because the distribution of these discourses is noticeably similar in both student populations, combined with the information of the fourth-year students' discourses on possible influences by the university,^f the evidence of this case study indicates that the discourses of veterinary professionals are, in large part, not formed during their education. Some adjustment occurs, but it seems that university schooling primarily strengthens existing discourses, in the sense that the knowledge learned is used to better defend and define a pre-existing position, which then becomes more coherent. This research suggests that the curriculum reinforces discourses that already exist when students enter the university. Similarly, Herzog et al.⁵ conclude that the majority of students feel that their general attitudes toward animals have not changed as a result of attending veterinary school. From a survey of graduate students in economics, Klammer and Colander²⁹ come to the same conclusion about economists: "These data suggest that schools tend to reinforce previously held positions."

The discourses described in this article can be used as a tool to improve guidance of veterinary students, to let them reflect on their opinions concerning animals and their caretakers. By reading these discourses, students can gain insights into their own discourses; they can be made aware of conflicts or more aware of their own discursive space. Since the descriptions stay close to the actual language use and experiences of veterinary students, most students will recognize themselves in one of the discourses. The discourses can be used to introduce different viewpoints on the most fundamental question of veterinary ethics—to whom does the veterinarian morally owe primary allegiance?—and as a starting point for students to discuss their opinions about their anticipated relationship with animal patients and their caregivers: Which of the four discourses is closest to your own position and why? How do you feel about the other three discourses? Which discourse is least sympathetic to you and why? Did you change your discourse during your studies?

NOTES

- In everyday usage, "discourse" is generally defined as "conversation." Within the social sciences, however, the concept has a wider meaning.
- The following quasi-normal distribution for the 42 statements was chosen: two in the −3 category, four in the −2 category, nine in the −1 category, 12 in the 0 category, nine in the +1 category, four in the +2 category, and two in the +3 category (−3 = disagree most, +3 = agree most).

- c Although a forced distribution was used, some deviations were tolerated. If the Q-sorters found the forced distribution too much unlike their positions, they were allowed to vary slightly the number of statements they were "supposed to" have in a category.
- d Q-analysis was performed using PQMethod 2.11 <www.rz.unibw-muenchen.de/~p41bsmk/qmethod/>.
- e The loadings were first transformed into Fisher's Z in order to meet, as much as possible, the assumption of Gaussian distributions.
- e See Q-sort of statement 5:

5. Your opinion is formed in this study.	0	0	-1
They want to create certain types of veterinary practitioners. You are taught what is right.		0	

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AUTHOR INFORMATION

Gjalt de Graaf, PhD, holds a position as a post-doctoral researcher in the Department of Public Administration and Organization Science, Faculty of Social Sciences, De Boelelaan 1081c, 1081 HV Amsterdam, The Netherlands.
E-mail: g.de.graaf@fsw.vu.nl. His current studies are on the integrity of governance.